

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the above-referenced application.

Listing of Claims:

1. (Currently amended) An RF package comprising:

a multilayered dielectric substrate ~~on which~~ including first and second dielectric substrates ~~are formed~~, said multilayered dielectric substrate having a cavity in the second dielectric substrate where a semiconductor element is to be mounted on the first dielectric substrate;

a feed-through for connecting an inside and outside of said cavity and comprised of a coplanar line ~~formed~~ disposed on said first dielectric substrate and an inner layer line ~~formed~~ disposed on the first dielectric substrate obtained by ~~forming~~ disposing said second dielectric substrate on said coplanar line, said coplanar line and said inner layer line sharing a signal conductor ~~formed~~ disposed on the first dielectric substrate;

metal members ~~formed~~ disposed at a connection interface between said coplanar line and said inner layer line on two sides of said signal conductor, and connecting first ground conductors of the coplanar line and the inner layer line on the first dielectric substrate to a second ground conductor disposed on a top surface of the second dielectric substrate, said first and second ground conductors being connected by said metal members at an edge of the second dielectric substrate and at an interior portion of said first dielectric substrate; and

a plurality of first via holes ~~formed~~ disposed in said first dielectric substrate and a plurality of second via holes ~~formed~~ disposed in said second dielectric substrate;

wherein said coplanar line has a discontinuous surface caused by a level difference of the first and second dielectric substrates on the outside of said cavity, said discontinuous surface being the connection interface between said coplanar line and said inner layer line.

2. (Currently amended) A package according to claim 1, ~~further comprising~~ wherein:

said first ground conductors ~~formed~~ are disposed on an upper surface of said first dielectric substrate and arranged on two sides of said signal conductor to be away from each other at a predetermined distance;

a said second ground conductor ~~formed~~ is disposed on said second dielectric substrate; and

said plurality of second via holes ~~formed~~ is disposed in said second dielectric substrate to connect said first and second ground conductors to each other at positions away from said connection interface between said coplanar line and said inner layer line.

3. (Currently amended) A An RF package according to claim 2, comprising:

a multilayered dielectric substrate including first and second dielectric substrates,
said multilayered dielectric substrate having a cavity in the second dielectric substrate
where a semiconductor element is to be mounted on the first dielectric substrate;

a feed-through for connecting an inside and outside of said cavity and comprised
of a coplanar line disposed on said first dielectric substrate and an inner layer line
disposed on the first dielectric substrate obtained by disposing said second dielectric
substrate on said coplanar line, said coplanar line and said inner layer line sharing a
signal conductor disposed on the first dielectric substrate;

metal members disposed at a connection interface between said coplanar line and
said inner layer line on two sides of said signal conductor, and connecting first ground
conductors of the coplanar line and the inner layer line on the first dielectric substrate to a
second ground conductor disposed on a top surface of the second dielectric substrate, said
ground conductors being connected at an edge of the second dielectric substrate; and

a plurality of first via holes disposed in said first dielectric substrate and a
plurality of second via holes disposed in said second dielectric substrate;

wherein said first ground conductors are disposed on an upper surface of said first
dielectric substrate and arranged on two sides of said signal conductor to be away from
each other at a predetermined distance;

said second ground conductor is disposed on said second dielectric substrate; and

said plurality of second via holes is disposed in said second dielectric substrate to
connect said first and second ground conductors to each other at positions away from said
connection interface between said coplanar line and said inner layer line; and

wherein a distance λ ~~between~~ from said connection interface between said coplanar line and said inner layer line ~~and to~~ a center of one of said second via holes which is at an end nearest to said connection interface is represented by

$$\lambda < \frac{c}{2f\sqrt{\epsilon_r}}$$

where c , f , and ϵ_r respectively indicate a speed of light, a signal frequency, and a specific dielectric constant of said dielectric substrate.

4. (Currently amended) A An RF package according to claim 2, comprising:

a multilayered dielectric substrate including first and second dielectric substrates,
said multilayered dielectric substrate having a cavity in the second dielectric substrate
where a semiconductor element is to be mounted on the first dielectric substrate;

a feed-through for connecting an inside and outside of said cavity and comprised
of a coplanar line disposed on said first dielectric substrate and an inner layer line
disposed on the first dielectric substrate obtained by disposing said second dielectric
substrate on said coplanar line, said coplanar line and said inner layer line sharing a
signal conductor disposed on the first dielectric substrate;

metal members disposed at a connection interface between said coplanar line and
said inner layer line on two sides of said signal conductor, and connecting first ground
conductors of the coplanar line and the inner layer line on the first dielectric substrate to a
second ground conductor disposed on a top surface of the second dielectric substrate, said
ground conductors being connected at an edge of the second dielectric substrate; and

a plurality of first via holes disposed in said first dielectric substrate and a
plurality of second via holes disposed in said second dielectric substrate;

wherein said first ground conductors are disposed on an upper surface of said first
dielectric substrate and arranged on two sides of said signal conductor to be away from
each other at a predetermined distance;

said second ground conductor is disposed on said second dielectric substrate; and

said plurality of second via holes is disposed in said second dielectric substrate to
connect said first and second ground conductors to each other at positions away from said
connection interface between said coplanar line and said inner layer line; and

wherein said plurality of second via holes are arranged on two sides of said signal conductor at a predetermined pitch w, and

a pitch λ_{p2} of said second via holes in a signal propagating direction is represented by

$$\lambda_{p2} < \frac{c}{2f\sqrt{\epsilon_r}}$$

where c, f, and ϵ_r respectively indicate a speed of light, a signal frequency, and a specific dielectric constant of said dielectric substrate.

5. (Currently amended) A package according to claim 4, wherein a the predetermined pitch w of said second via hole in a direction perpendicular to the signal propagating direction is indicated by

$$W < \frac{c}{2f\sqrt{\epsilon_r}}$$

6. (Currently amended) A package according to claim 4, further comprising:

a third ground conductor ~~formed~~ disposed on a lower surface of said first dielectric substrate; and

said plurality of first via holes ~~formed~~ disposed in said first dielectric substrate to connect said first and third ground conductors to each other, said plurality of first via holes being arranged on two sides of said signal conductor at a the predetermined pitch w.

7. (Currently amended) A package according to claim 6, wherein a pitch λ_{p1} of said plurality of first via holes in the signal propagating direction is represented by

$$\lambda_{p1} < \frac{c}{2f\sqrt{\frac{\epsilon_r + 1}{2}}}$$

8. (Previously presented) A package according to claim 2, wherein said metal members have ends on a signal conductor side that are aligned with ends of said second via holes on the signal conductor side.
9. (Original) A package according to claim 2, wherein said metal members connect said first and second ground conductors to each other at said connection interface between said coplanar line and said inner layer line.
10. (Original) A package according to claim 1, wherein said metal members are metal posts.
11. (Previously presented) A package according to claim 1, wherein said metal members are semi-cylindrical metal electrodes having an edge at said connection interface which does not extend beyond said connection interface.

12. (Currently amended) A An RF package according to claim 1, comprising:

a multilayered dielectric substrate including first and second dielectric substrates,
said multilayered dielectric substrate having a cavity in the second dielectric substrate
where a semiconductor element is to be mounted on the first dielectric substrate;

a feed-through for connecting an inside and outside of said cavity and comprised
of a coplanar line disposed on said first dielectric substrate and an inner layer line
disposed on the first dielectric substrate obtained by disposing said second dielectric
substrate on said coplanar line, said coplanar line and said inner layer line sharing a
signal conductor disposed on the first dielectric substrate;

metal members disposed at a connection interface between said coplanar line and
said inner layer line on two sides of said signal conductor, and connecting ground
conductors of the coplanar line and the inner layer line on the first dielectric substrate to a
top surface of the second dielectric substrate at an edge of the second dielectric substrate;
and

a plurality of first via holes disposed in said first dielectric substrate and a
plurality of second via holes disposed in said second dielectric substrate; and

wherein said metal members are metal plates projecting from a side of said
second dielectric substrate extending beyond said connection interface in a direction
toward said coplanar line.

13. (Currently amended) A package according to claim 1, wherein said multilayered dielectric substrate is ~~formed~~ comprised of co-fired ceramics.

14. (Currently amended) ~~A~~ An RF package according to claim 1, comprising:

a multilayered dielectric substrate including first and second dielectric substrates, said multilayered dielectric substrate having a cavity in the second dielectric substrate where a semiconductor element is to be mounted on the first dielectric substrate;

a feed-through for connecting an inside and outside of said cavity and comprised of a coplanar line disposed on said first dielectric substrate and an inner layer line disposed on the first dielectric substrate obtained by disposing said second dielectric substrate on said coplanar line, said coplanar line and said inner layer line sharing a signal conductor disposed on the first dielectric substrate;

metal members disposed at a connection interface between said coplanar line and said inner layer line on two sides of said signal conductor, and connecting ground conductors of the coplanar line and the inner layer line on the first dielectric substrate to a top surface of the second dielectric substrate at an edge of the second dielectric substrate;
and

a plurality of first via holes disposed in said first dielectric substrate and a plurality of second via holes disposed in said second dielectric substrate; and

wherein edges of said metal members at said connection interface measuring a first length at said connection interface, said first length being larger than a diameter of at least one of: a portion of said plurality of first via holes in said first dielectric substrate, and a portion of said plurality of second via holes in said second dielectric substrate.

15. (New) The package according to claim 1, wherein the second dielectric substrate, which is smaller in size than the first dielectric substrate, is accumulated on the first dielectric substrate, and wherein a central portion of the second dielectric substrate is punched in such a way as to form said cavity, and wherein the connection interface between the coplanar line and the inner layer line is formed by the outer wall of the second dielectric substrate.

16. (New) The package according to claim 1, wherein said coplanar line has another discontinuous surface caused by a level difference of the first and second dielectric substrates on the inside of said cavity.